Application No. 09/622,206

Reply to Advisory Action

CLAIM AMENDMENTS

- 1. (Currently Amended) A method for quantitatively detecting an antigen which comprises:
- a first step of providing an Fab' antibody having a uniform isoelectric point, said antibody forming an immune complex with an antigen in an analytical sample and being modified by adding an amino acid sequence comprising a charged amino acid residue and by being labeled with a fluorescent dye;
- a second step of mixing the Fab' antibody having a uniform isoelectric point with the analytical sample containing the antigen to obtain a mixture comprising the immune complex;
 - a third step of separating the mixture by performing electrophoresis in a carrier;
- a fourth step of irradiating an excitation light which excites the fluorescent dye to the mixture separated in the third step to cause fluorescence in the immune complex; and
- a fifth step of detecting the fluorescence and correlating the detected fluorescence with the amount of antigen;

wherein the amine soid sequence is added adjacent to a C-terminal of an L-chain of the Fab' antibody having a uniform isoelectric point.

2. (Canceled)

- 3 (Previously Presented) The method according to claim 1, wherein the fluorescent dye is bound to a cysteine residue which is not involved in binding with an L chain and which exists in an amino acid sequence adjacent to a C-terminal of a CH1 region of the Fab' antibody having a uniform isoelectric point.
- 4. (Previously Presented) The method according to claim 1, wherein the electrophoresis is performed by isoelectric focusing.
- (Previously Presented) The method according to claim 1, wherein the electrophoresis is performed by capillary electrophoresis.

6.-7. (Canceled)

8. (Previously Presented) The method according to claim 1, wherein the Fab' antibody having a uniform isoelectric point is produced by a method which comprises:

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a first step of providing an Fd chain gene encoding a VH region and CH1 region, and an amino acid sequence which adjoins to a C-terminal of the CH1 region and comprises a cysteine residue which is not involved in binding with an L chain in an Fab' antibody, and an L chain gene encoding the L chain of the Fab' antibody;

a second step of linking the Fd chain gene and the L chain gene in the expressible state to obtain a gene expressing an Fab' antibody;

a third step of modifying the gene expressing an Fab' antibody to express an amino acid sequence comprising a charged amino acid residue adjacent to a C-terminal of the L chain, and site-specifically mutating in the gene expressing an Fab' antibody at least one codon encoding an amide group-containing amino acid residue in the CH1 region, into a codon encoding an amide group-non-containing amino acid residue except for cysteine to obtain a gene expressing a charge modified Fab' antibody;

a fourth step of transforming a host cell with the gene expressing a charge modified Fab' antibody and culturing the resultant transformant to obtain an Fab' antibody having a uniform isoelectric point, the Fab' antibody being modified by adding an amino acid sequence comprising a charged amino acid sequence comprising a cysteine residue which is not involved in binding with an L chain adjacent to the C-terminal CH1 region, and

a fifth step of binding a fluorescent dye to the cysteine residue which is not involved in binding with an L chain in the Fab' antibody having a uniform isoelectric point obtained in the fourth step.

9.-21. (Canceled)

22. (New) The method according to claim 1, wherein the amino acid sequence is added to a C-terminal of an L chain of the Fab' antibody having a uniform isoelectric point.